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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/043,146	01/14/2002	Sung Gue Lee	0630-1402P	6825
2292	7590	03/01/2004	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			NGUYEN, DONGHAI D	
			ART UNIT	PAPER NUMBER
			3729	9
DATE MAILED: 03/01/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/043,146	LEE ET AL. <i>[Signature]</i>
	Examiner Donghai D. Nguyen	Art Unit 3729

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 23 January 2004.  
 2a) This action is FINAL.      2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 28-59 is/are pending in the application.  
 4a) Of the above claim(s) 35-50 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 28-34 and 51-59 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>5</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Group I claims 28-34 and 51-57 in Paper No. 8 is acknowledged.

### ***Specification***

2. The abstract of the disclosure is objected to because the claimed invention is a method for plugging holes in a printed circuit board not a device. Correction is required. See MPEP § 608.01(b).
3. The disclosure is objected to because of the following informalities: the phrase "Figures 6 and 7" (page 14, line 6) should be --Figures 6 and 7-- and applicants are advised to correct any informalities in the specification.

Appropriate correction is required.

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: --METHOD FOR PLUGGING HOLE IN A PRINTED CIRCUIT BOARD--.

### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

6. Claims 28-34 and 51-59 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 28 and 51 the steps of the method are not clearly described. Claims 28 and 51 are directed to a hole plugging method, but there are no positive steps in the claims to carry out the claimed invention such as, providing a circuit board including a circuit pattern with spaces between surface sides of the circuit trace or filling the solder resist into the spaces by moving the squeegee, etc.

The word "or" (claim 28, lines 4 and 6) and "and/or" (claims 52, line 4; claim 54, lines 2 and 4; claim 55, lines 3, 5, and 7; and claim 56, line 3) are vague and indefinite since it is uncertain which probabilities of the steps of the claimed invention are carried.

#### *Claim Rejections - 35 USC § 102*

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 28-29, 33-34 and 51-54, 58-59 are rejected under 35 U.S.C. 102(b) as being anticipated by JP Application No. Jp10-219,237 to Miura et al.

Regarding claims 28-29, 51, and 54, Miura et al disclose a hole plugging method for plugging holes in a printed circuit board (1) having a plurality of first circuit patterns (4) formed on the circuit board, wherein a solder resist (7-1; 7-2; 7-3) is filled in spaces between surface side

circuit patterns (Fig. 1) by moving the squeegee (8/9) under the condition of being abutted on an upper surface of the circuit pattern on the surface of a printed circuit board and for in the board and the hole (see Figs. 2 and 3).

Regarding claims 33 and 58, Miura et al disclose the mask 11.

Regarding claims 34 and 53 see Fig. 1.

Regarding claim 52 and 59, Fig. 1 discloses a via holes formed to electronically connect between first and second circuit patterns and plurality of circuit patterns (2/3) inside the board and the solder resist filled to the same height as the upper surface of the circuit patterns.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 30-32 and 55-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al in view of US Patent 6,276,055 B1 to Bryan et al.

Miura et al disclose all the steps for plugging a hole in printed circuit board except the steps of moving the squeegee under the condition of being abutted on the surface of the holes a second time in the same or the opposite direction to the first plugging step; However Bryan et al teach that the steps of moving the squeegee under the condition of being abutted on the surface of the holes several times time (col. 8, line 10) in the same or the opposite direction to the first plugging step (Col. 8, lines 15-17) for effectively filling the holes (Col. 8, lines 4-7). It would

have being obvious to one having ordinary skill in the art at the time the invention was made to modify Miura et al to move the squeegee second (or multiple) times as taught by Bryan et al for effectively filling the holes.

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donghai D. Nguyen whose telephone number is (703) 305-7859. The examiner can normally be reached on Monday-Friday (9:00-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter D. Vo can be reached on (703) 308-1789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DN

  
PETER VO  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3700